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NEWS	1		Web Page URLs for STN Seminar Schedule - N. America
NEWS	2		"Ask CAS" for self-help around the clock
NEWS	3	Feb 24	PCTGEN now available on STN
NEWS	4	Feb 24	TEMA now available on STN
NEWS	5	Feb 26	NTIS now allows simultaneous left and right truncation
NEWS	6	Feb 26	PCTFULL now contains images
NEWS	7	Mar 04	SDI PACKAGE for monthly delivery of multifile SDI results
NEWS	8	Mar 24	PATDPAFULL now available on STN
NEWS	9	Mar 24	Additional information for trade-named substances without structures available in REGISTRY
NEWS	10	Apr 11	Display formats in DGENE enhanced
NEWS	11	Apr 14	MEDLINE Reload
NEWS	12	Apr 17	Polymer searching in REGISTRY enhanced
NEWS	13	AUG 15	Indexing from 1937 to 1946 added to records in CA/CAPLUS
NEWS	14	Apr 21	New current-awareness alert (SDI) frequency in WPIDS/WPINDEX/WPIX
NEWS	15	Apr 28	RDISCLOSURE now available on STN
NEWS	16	May 05	Pharmacokinetic information and systematic chemical names added to PHAR
NEWS	17	May 15	MEDLINE file segment of TOXCENTER reloaded
NEWS	18	May 15	Supporter information for ENCOMPAT and ENCOMPLIT updated
NEWS	19	May 19	Simultaneous left and right truncation added to WSCA
NEWS	20	May 19	RAPRA enhanced with new search field, simultaneous left and right truncation
NEWS	21	Jun 06	Simultaneous left and right truncation added to CBNB
NEWS	22	Jun 06	PASCAL enhanced with additional data
NEWS	23	Jun 20	2003 edition of the FSTA Thesaurus is now available
NEWS	24	Jun 25	HSDB has been reloaded
NEWS	25	Jul 16	Data from 1960-1976 added to RDISCLOSURE
NEWS	26	Jul 21	Identification of STN records implemented
NEWS	27	Jul 21	Polymer class term count added to REGISTRY
NEWS	28	Jul 22	INPADOC: Basic index (/BI) enhanced; Simultaneous Left and Right Truncation available
NEWS	29	AUG 05	New pricing for EUROPATFULL and PCTFULL effective August 1, 2003
NEWS	30	AUG 13	Field Availability (/FA) field enhanced in BEILSTEIN
NEWS	31	AUG 15	PATDPAFULL: one FREE connect hour, per account, in September 2003
NEWS	32	AUG 15	PCTGEN: one FREE connect hour, per account, in September 2003
NEWS	33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS	34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003
NEWS	35	AUG 18	Data available for download as a PDF in RDISCLOSURE
NEWS	36	AUG 18	Simultaneous left and right truncation added to PASCAL

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NEWS EXPRESS April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT  
MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),  
AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003  
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NEWS INTER General Internet Information  
NEWS LOGIN Welcome Banner and News Items  
NEWS PHONE Direct Dial and Telecommunication Network Access to STN  
NEWS WWW CAS World Wide Web Site (general information)

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FILE COVERS 1907 - 18 Aug 2003 VOL 139 ISS 8

FILE LAST UPDATED: 17 Aug 2003 (20030817/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s phthalic(w)anhydride

45600 PHTHALIC

2 PHTHALICS

45600 PHTHALIC

(PHTHALIC OR PHTHALICS)

182800 ANHYDRIDE

29930 ANHYDRIDES

192432 ANHYDRIDE

(ANHYDRIDE OR ANHYDRIDES)

L1 25878 PHTHALIC(W) ANHYDRIDE

=> s 11 and process

1840575 PROCESS

1198921 PROCESSES

2722877 PROCESS

(PROCESS OR PROCESSES)

L2 2395 L1 AND PROCESS ✓

=> s 12 and oxidation

389118 OXIDATION

4646 OXIDATIONS

390347 OXIDATION

(OXIDATION OR OXIDATIONS)

659361 OXIDN

8319 OXIDNS

661060 OXIDN

(OXIDN OR OXIDNS)

790702 OXIDATION

(OXIDATION OR OXIDN)

L3 421 L2 AND OXIDATION ✓

=> s 13 and catalyst

634127 CATALYST

637943 CATALYSTS

811717 CATALYST

(CATALYST OR CATALYSTS)

L4 252 L3 AND CATALYST ✓

=> s 14 p/dt

MISSING OPERATOR L4 P/DT

The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> s 14 and p/dt

4159065 P/DT

L5 117 L4 AND P/DT

=> s 15 us/pc

MISSING OPERATOR L5 US/PC

The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> s 15 and us/pc

1184059 US/PC

L6 53 L5 AND US/PC

=> s 16 and py<=1998

18916393 PY<=1998

L7 46 L6 AND PY<=1998

=> d 17 ibib abs hitstr tot

L7 ANSWER 1 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1998:760025 CAPLUS

DOCUMENT NUMBER: 129:331158

TITLE: **Process** and imide **catalysts** for the **oxidation** of nonaromatic ethers to esters or anhydrides

INVENTOR(S): Ishii, Yasutaka; Nakano, Tatsuya

PATENT ASSIGNEE(S): Daicel Chemical Industries, Ltd., Japan

SOURCE: Eur. Pat. Appl., 12 pp.

CODEN: EPXXDW

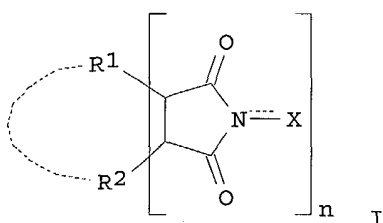
DOCUMENT TYPE: **Patent**

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 878458	A1	19981118	EP 1998-108533	19980511 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 10316610	A2	19981202	JP 1997-122526	19970513 <--
US 6037477	A	20000314	US 1998-74604	19980508 <--
PRIORITY APPLN. INFO.:			JP 1997-122526	19970513
OTHER SOURCE(S):			MARPAT 129:331158	
GI				



AB Linear or cyclic nonarom. ethers (e.g., phthalide) are oxidized with oxygen in the presence of an imide **oxidn. catalyst** [I; R1, R2 = H, halogen, alkyl, aryl, cycloalkyl, OH, alkoxy carbonyl, acyl; n = 1-3; X = O, OH; R1R2 = double bond or (non)arom. ring moiety] and an optional cocatalyst (e.g., a transition metal compd.) to produce the corresponding chain or cyclic ester or anhydride in high yield and selectivity. Thus, phthalide was oxidized in PhCN in the presence of 2 mol % N-hydroxyphthalimide with O2(g) at 100.degree., producing **phthalic anhydride** in 46% yield.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 2 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1998:589505 CAPLUS

DOCUMENT NUMBER: 129:231139

TITLE: Manufacture of **phthalic anhydride** and **catalyst** for the **process**

INVENTOR(S): Hefe, Gerhard; Kratzer, Otto; Scheidmeir, Walter; Ulrich, Bernhard

PATENT ASSIGNEE(S): BASF A.-G., Germany

SOURCE: Ger. Offen., 7 pp.

CODEN: GWXXBX

DOCUMENT TYPE: **Patent**

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19707943	A1	19980903	DE 1997-19707943	19970227 <--
DE 19707943	C2	19990708		
WO 9837965	A1	19980903	WO 1998-EP779	19980212 <--
W: CN, JP, KR, SG, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 964744	A1	19991222	EP 1998-912298	19980212
EP 964744	B1	20030423		
R: AT, BE, DE, ES, FR, GB, IT, NL, SE				

JP 2001513091	T2	20010828	JP 1998-537233	19980212
CN 1104279	B	20030402	CN 1998-802911	19980212
AT 238099	E	20030515	AT 1998-912298	19980212
TW 425393	B	20010311	TW 1998-87102805	19980226
US 6458970	B1	20021001	US 1999-380214	19990826 <--

PRIORITY APPLN. INFO.:

DE 1997-19707943 A 19970227

WO 1998-EP779 W 19980212

AB **Phthalic anhydride** (I) is manufd. by gas-phase oxidn. of o-xylene and/or naphthalene with an O<sub>2</sub>-contg. gas in 2 stages over a **catalyst** consisting of an active layer comprising TiO<sub>2</sub> and V<sub>2</sub>O<sub>5</sub> supported on an inert nonporous carrier: in the first stage the active **catalyst** layer contains V<sub>2</sub>O<sub>5</sub> 3-6, Cs 0.3-0.5, and anatase to 100 wt.%; the second-stage **catalyst** active layer contains V<sub>2</sub>O<sub>5</sub> 1-10, Sb<sub>2</sub>O<sub>3</sub> 0-10, Cs or Rb 0.01-0.3, P 0.01-0.3, and anatase to 100 wt.%. A **catalyst** system of this type produced I in 83.5% yield initially and 82.7% yield after 1 yr of operation. The amt. of xylene in the exit gases was 31 mg/m<sup>3</sup>, sufficiently slight that no special purifn. was required to protect the environment.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 3 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1998:585979 CAPLUS

DOCUMENT NUMBER: 129:203393

TITLE: Improved preparation of **phthalic anhydride**

INVENTOR(S): Lindstroem, Jan

PATENT ASSIGNEE(S): Neste Oy, Finland

SOURCE: Ger. Offen., 6 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19807018	A1	19980827	DE 1998-19807018	19980219 <--
SE 9700655	A	19980511	SE 1997-655	19970225 <--
SE 507313	C2	19980511		
US 5969160	A	19991019	US 1998-21749	19980211 <--
IT 1298227	B1	19991220	IT 1998-MI259	19980211
CN 1194969	A	19981007	CN 1998-107706	19980224 <--
CN 1069628	B	20010815		

PRIORITY APPLN. INFO.:

SE 1997-655 A 19970225

AB **Phthalic anhydride** is manufd. by gas-phase oxidn. of o-xylene or naphthalene in the presence of V<sub>2</sub>O<sub>5</sub> or TiO<sub>2</sub> using a salt-cooled main reactor and a second or post-reactor not provided with salt cooling. The **process** allows for a simplified reactor and **catalyst** arrangement and results in decreased phthalide formation in the final product. In an example, a yield of 95.9-96.3% **phthalic anhydride** contg. 0.06-0.08% phthalide was consistently obtained during a 2-wk run using V<sub>2</sub>O<sub>5</sub> **catalyst** and o-xylene.

L7 ANSWER 4 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1998:268454 CAPLUS

DOCUMENT NUMBER: 128:294600

TITLE: Process for the preparation of **phthalic anhydride** by catalytic gas-phase oxidation

INVENTOR(S): Hara, Tadanori; Nakamura, Nobuyoshi

PATENT ASSIGNEE(S): Nippon Steel Chemical Co., Ltd., Japan; Hara,

SOURCE: Tadanori; Nakamura, Nobuyoshi  
PCT Int. Appl., 34 pp.  
CODEN: PIXXD2

DOCUMENT TYPE: **Patent**  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9817608	A1	19980430	WO 1997-JP3823	19971022 <--
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
TW 415939	B	20001221	TW 1997-86115331	19971017
ZA 9709362	A	19980512	ZA 1997-9362	19971020 <--
AU 9747224	A1	19980515	AU 1997-47224	19971022 <--
EP 985648	A1	20000315	EP 1997-909587	19971022
EP 985648	B1	20030521		
R: BE, DE, FR, GB, IT				
CN 1237951	A	19991208	CN 1997-199821	19971027
KR 2000052776	A	20000825	KR 1999-703588	19990423
US 6369240	B1	20020409	US 1999-297019	19990423 <--
PRIORITY APPLN. INFO.:				
			JP 1996-280625	A 19961023
			JP 1996-280626	A 19961023
			WO 1997-JP3823	W 19971022
OTHER SOURCE(S): CASREACT 128:294600				
AB Characterized is a gas-phase oxidization <b>process</b> which comprises passing a gaseous feed mixt. comprising a gas contg. mol. oxygen and an optionally substituted hydrocarbon through a fixed-bed <b>catalyst</b> layer to oxidize the hydrocarbon, wherein the porosity of the <b>catalyst</b> layer increases gradually along at least one stage when the mixt. flows down from the upstream side. This <b>process</b> enables high-yield and high-productivity gas-phase <b>oxidn.</b> of various hydrocarbons such as naphthalene, xylene, durene, acenaphthene, anthracene and indene. Thus, naphthalene was oxidized by O over V2O5-Cs2SO4-P2O5-BaO <b>catalyst</b> at 340-360.degree. at feeding speed of 300 g/h to give 100% <b>phthalic anhydride</b> .				
REFERENCE COUNT:	4	THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT		

L7 ANSWER 5 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1995:996888 CAPLUS  
DOCUMENT NUMBER: 124:88120  
TITLE: Preparation of **phthalic anhydride** from naphthalene or o-xylene  
INVENTOR(S): Fuderer, Andrija  
PATENT ASSIGNEE(S): Germany  
SOURCE: Ger. Offen., 6 pp.  
CODEN: GWXXBX

DOCUMENT TYPE: **Patent**  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4412737	A1	19951019	DE 1994-4412737	19940413 <--

US 5608083 A 19970304 US 1995-417798 19950406 <--  
EP 686633 A1 19951213 EP 1995-105367 19950410 <--

R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, NL, PT, SE

PRIORITY APPLN. INFO.: DE 1994-4412737 19940413

AB The title **process**, which permits a marked decrease in gas through-put in the reactor, uses .gtoreq.2 reactors, the effluent from the 1st of which is mixed with sufficient raw materials (or a gas stream contg. raw materials) in amts. giving an O-org. material mol ratio <7:1 and fed to the succeeding reactor. A mixt. (contg. 16.5% O) of fresh air 1500 and offgas 500 kg-mol/h was compressed, preheated, mixed with 26 kg-mol/h o-xylene, passed over a fluidized **catalyst** bed, and the reaction gas was cooled in a heat exchanger to 370.degree., mixed with 40 kg-mol/h o-xylene (giving a gas contg. 11.9 mol% O and 3.1 mol% org. matter), fed to a 2-stage pipe reactor, and cooled to give 4000 kg/h crude product, while another 4000 kg/h was recovered from the desublimator.

L7 ANSWER 6 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1995:302824 CAPLUS

DOCUMENT NUMBER: 122:56792

TITLE: **Process** for producing sulfonylbis ( **phthalic anhydride**)

INVENTOR(S): Brugge, Stephen P.; Holzhauer, Juergen K.; Wolff, Thomas E.

PATENT ASSIGNEE(S): Amoco Corporation, USA

SOURCE: U.S., 19 pp.  
CODEN: USXXAM

DOCUMENT TYPE: **Patent**  
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5342968	A	19940830	US 1990-542742	19900622 <--

PRIORITY APPLN. INFO.: US 1990-542742 19900622

AB The title method comprises combining, in an **oxidn.** reactor, a liq. mixt. of 3,3',4,4'-tetramethyl di-Ph sulfone, C2-6 aliph. carboxylic acid solvent, and an **oxidn. catalyst** (sol. in the solvent) and constituted by cobalt, manganese, zirconium, and bromine, at 275-440.degree.F and 100-400 psig, and maintaining the resulting mixt. at said temp. and pressure in the presence of a mol. oxygen-contg. gas until a reaction mixt. enriched in sulfonyl bis(phthalic acid) is produced;. The sulfonyl bis(phthalic acid) is recovered from the resulting reaction mixt. by cooling to crystallize at least some of the sulfonyl bis(phthalic acid) present and sepg. therefrom solid cryst. sulfonyl bis(phthalic acid); and (c) dehydrating the recovered solid sulfonyl bis(phthalic acid) at 370-500.degree.F by maintaining the recovered sulfonyl bis(phthalic acid) at the elevated temp. for a time sufficient to convert the solid sulfonyl bis(phthalic acid) to sulfonyl bis(**phthalic anhydride**).

L7 ANSWER 7 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1993:581491 CAPLUS

DOCUMENT NUMBER: 119:181491

TITLE: **Oxidation** of ortho-xylene using a fluidized bed **catalyst**

INVENTOR(S): Ivanov, Alexey A.; Mescheryakov, Vitaly D.; Stepanov, Sergey P.; Chaykovsky, Sergey P.; Yabrov, Alexandr A.; Gaevoy, Victor P.; Pokrovskaya, Svetlana A.; Sadovskaya, Ecaterina M.; Sheplev, Valentin S.; Ermakov, Youry P.

PATENT ASSIGNEE(S): Institute of Catalysis, USSR

SOURCE: U.S., 9 pp.

CODEN: USXXAM  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

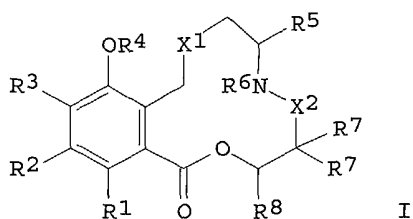
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5225575	A	19930706	US 1991-716635	19910617 <--
US 5380497	A	19950110	US 1993-33338	19930318 <--
PRIORITY APPLN. INFO.:			US 1991-716635	19910617

AB The **process** with improved product yield comprises reacting 60-95% of the total o-xylene in a 1st contact zone at 300-500.degree., passing the reaction mixt., while restricting the back circulation, contg. the unreacted xylene and **catalyst** to a 2nd contact zone which has a greater vol. than the 1st contact zone and which is maintained at a temp. .gtoreq.50.degree. lower than that of the 1st zone, adsorbing xylene from the reaction mixt. on the surface of the solid **catalyst**, and returning the **catalyst** to the 1st contact zone. O-xylene and air were fed into a reactor contg. a V2O5-TiO2-K3PO4 **catalyst** supported on SiO2, two contact zones with temp. controlled at 360.degree. and 250.degree. were established, and the **catalyst** recirculation ratio to high temp. zone was 7 L/s, resulting in 92% yield of **phthalic anhydride**. The yield dropped to 67 vol% when only 1 reaction zone was used at 330.degree..

L7 ANSWER 8 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1993:517285 CAPLUS  
 DOCUMENT NUMBER: 119:117285  
 TITLE: Preparation of benzoxathiaazabicyclododecines as novel DNA gyrase inhibitors  
 INVENTOR(S): Arisawa, Mikio; Goetschi, Erwin; Kamiyama, Tsutomu; Masciadri, Raffaello; Shimada, Hisao; Watanabe, Junko; Hebeisen, Paul; Link, Helmut  
 PATENT ASSIGNEE(S): Hoffmann-La Roche, F., und Co. A.-G., Switz.  
 SOURCE: PCT Int. Appl., 164 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9218490	A1	19921029	WO 1992-EP809	19920409 <--
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE				
EP 535192	A1	19930407	EP 1992-908147	19920409 <--
EP 535192	B1	19960619		
R: AT, BE, CH, DE, DK, FR, GB, IT, LI, NL				
JP 05508167	T2	19931118	JP 1992-507648	19920409 <--
AT 139532	E	19960715	AT 1992-908147	19920409 <--
US 5294609	A	19940315	US 1992-952537	19921209 <--
US 5399741	A	19950321	US 1994-177483	19940106 <--
US 5486466	A	19960123	US 1994-339442	19941114 <--
PRIORITY APPLN. INFO.:			EP 1991-106105	19910417
			WO 1992-EP809	19920409
			US 1992-952537	19921209
			US 1994-177483	19940106
OTHER SOURCE(S):		MARPAT 119:117285		
GI				





AB A **process** for the prepn. of the title compds. I (X1 = S or SO, X2 = C(O) or C(S), R1 = H, alkyl, halogen, R2,R3 = H, alkyl, halogen, amino, acylamino, R4 = H, R5 = H, esterified carboxy or amidated carboxy, R6,R7 = H, alkyl, R8 = H, alkyl, esterified carboxy or amidated (thio)carboxy group) useful as antimicrobials, are prepd. E.g., 1.1 g of 3,5-diacetoxy-6-[(R)-2-((S)-2-(1-tert-butoxyformamido)-3-methylbenzoic acid to give tert-Bu (4R, 7S)-12,14-diacetoxy-1,3,4,5,6,7,8,10-octahydro-4-methoxy carbonyl-11-methyl-6,10-dioxo-9,2,5-benzoxa thiaazacyclododecine-7-carbamate as white crystals.

L7 ANSWER 9 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1993:213725 CAPLUS

DOCUMENT NUMBER: 118:213725

TITLE: **Catalyst and process for producing phthalic anhydride**

INVENTOR(S): Ueda, Kenji; Okuno, Masaki; Kawabata, Tatsuya; Tanaka, Shinya

PATENT ASSIGNEE(S): Nippon Shokubai Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DOCUMENT TYPE: **Patent**

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 522871	A1	19930113	EP 1992-306351	19920710 <--
EP 522871	B1	19950111		
R: AT, BE, DE, ES, FR, GB, IT, NL, SE				
US 5235071	A	19930810	US 1992-906717	19920630 <--
JP 05239047	A2	19930917	JP 1992-177215	19920703 <--
RU 2043784	C1	19950920	RU 1992-5052045	19920707 <--
BR 9202537	A	19930316	BR 1992-2537	19920709 <--
CN 1069263	A	19930224	CN 1992-105792	19920710 <--
CN 1030070	B	19951018		
ES 2066561	T3	19950301	ES 1992-306351	19920710 <--
JP 09192492	A2	19970729	JP 1996-299010	19961111 <--
JP 3298609	B2	20020702		

PRIORITY APPLN. INFO.:

JP 1991-169622 A 19910710

JP 1992-177215 A3 19920703

AB **Catalysts** for vapor-phase oxidn. of o-xylene and(or) naphthalene with O contain (A) 1-20 parts V2O5 and 80-99 parts anatase (sp. surface area 10-60 m2/g) and (B) Nb2O3 0.01-1, .gtoreq.1 of K, Cs, Rb, and Tl as oxide 0.05-2, P2O5 0.2-1.2, Sb2O5 (obtained by using 5-valent Sb compd. as the Sb source) 0.55-5.5, and optionally, Ag2O 0.05-2 parts/100 parts (A) on a heat-resistant inorg. carrier. These **catalysts** exhibit high selectivity under high load and temp., are durable, and produce **phthalic anhydride** (I) under

stable conditions for a long period. Thus, o-xylene was oxidized by a 10:10:80 O-steam-N mixt. at .apprx.390.degree. in the presence of a **catalyst** contg. V2O5 2, TiO2 (sp. surface area 22 m2/g) 98, Nb2O3, P2O5, Cs2O 0.35, and Sb2O5 2.5 parts on SiC to give I in higher yields before and after 3 mo usage than yields obtained with similar **catalyst** using Sb2O3 instead of Sb2O5.

L7 ANSWER 10 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1992:653882 CAPLUS  
DOCUMENT NUMBER: 117:253882  
TITLE: Production of hydrocarbon derivatives  
INVENTOR(S): Ramachandran, Ramakrishnan; Maclean, Donald L.  
PATENT ASSIGNEE(S): BOC Group, Inc., USA  
SOURCE: Eur. Pat. Appl., 13 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: **Patent**  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 501757	A2	19920902	EP 1992-301585	19920225 <--
EP 501757	A3	19920930		
EP 501757	B1	19960103		
R: BE, DE, ES, FR, GB, IT, NL				
US 5179215	A	19930112	US 1991-661794	19910227 <--
CA 2059959	AA	19920828	CA 1992-2059959	19920123 <--
ZA 9200797	A	19930331	ZA 1992-797	19920204 <--
AU 9211094	A1	19920903	AU 1992-11094	19920219 <--
AU 659819	B2	19950601		
ES 2083080	T3	19960401	ES 1992-301585	19920225 <--
JP 05117217	A2	19930514	JP 1992-90389	19920227 <--

PRIORITY APPLN. INFO.:

US 1991-661794 19910227

AB The title **process**, for hydrocarbon derivs. such as maleic anhydride, comprises (A) contacting in the vapor phase in a reaction zone a hydrocarbon with an O-contg. gas in the presence of an **oxidn. catalyst**; (B) quenching the resulting gaseous product with an inert gas quench fluid; (C) recovering the hydrocarbon from the gaseous product; (D) sepg. unreacted hydrocarbon from the gaseous product, and (E) recycling the sepd. unreacted hydrocarbon to the reaction zone. With the use of a cooled or liquefied inert gas, the gaseous product stream is quenched to a temp. below the autoignition point of the flammable components in the product stream.

L7 ANSWER 11 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1992:60172 CAPLUS  
DOCUMENT NUMBER: 116:60172  
TITLE: Preparation of **phthalic anhydride** from o-xylene  
INVENTOR(S): Aichinger, Heinrich; Ruppel, Wilhelm; Seubert, Rolf; Boehning, Karl Heinz; Scheidmeir, Walter; Schmidt, Johannes; Schwarzmans, Matthias  
PATENT ASSIGNEE(S): BASF A.-G., Germany  
SOURCE: Eur. Pat. Appl., 5 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: **Patent**  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

EP 453951	A1	19911030	EP 1991-106180	19910418 <--
EP 453951	B1	19940921		
R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL, SE				
DE 4013051	A1	19911107	DE 1990-4013051	19900424 <--
US 5225574	A	19930706	US 1991-682295	19910409 <--
JP 04224573	A2	19920813	JP 1991-79012	19910411 <--
ES 2058974	T3	19941101	ES 1991-106180	19910418 <--
CA 2040981	AA	19911025	CA 1991-2040981	19910423 <--

PRIORITY APPLN. INFO.: DE 1990-4013051 19900424

AB **Phthalic anhydride** (I) is prep'd. in better yields by catalytic **oxidn.** of o-xylene in bundles of pipe reactors in 2 stages heated by sep. salt baths, the 1st being held at 320-380.degree. and the 2nd at a temp. 2-20.degree. lower, resulting in nearly complete conversion of xylene. This **process**, using a V-Sb-Rb-Ti oxide **catalyst** and a V-Sb-P-Ti oxide **catalyst** heated at 357 and 350.degree., resp., gave a 78.2% yield of I; vs. 72.6 when the reactors were held at 354 and 355.degree., resp.

L7 ANSWER 12 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1991:607666 CAPLUS

DOCUMENT NUMBER: 115:207666

TITLE: Preparation of 2,2-isopropylidenebis(phthalic acid) and 2,2-isopropylidenebis(**phthalic anhydride**) by **oxidn.** of

2,2-dixylylpropane over **catalysts** contg. bromine, cobalt, manganese and zirconium  
INVENTOR(S): Hussman, Gregory Paul; Bleull, Anthony Dean; Sanchez, Paul Anthony

PATENT ASSIGNEE(S): Amoco Corp., USA

SOURCE: Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DOCUMENT TYPE: **Patent**

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 443856	A1	19910828	EP 1991-301397	19910221 <--
EP 443856	B1	19950426		

R: AT, BE, CH, DE, ES, FR, GB, IT, LI, LU, NL, SE

US 5028737	A	19910702	US 1990-484346	19900222 <--
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PRIORITY APPLN. INFO.:	US 1990-484346	19900222
	US 1990-484354	19900222

OTHER SOURCE(S): CASREACT 115:207666

AB A **process** for the prepn. of 2,2-isopropylidenebis(phthalic acid) (I) comprises the **oxidn.** of dixylylpropane with a source of oxygen in the liq. phase in the presence of an aq. solvent comprising an aliph. C2-6-carboxylic acid and a **catalyst** system comprising Zr, Co, Mn, and bromine. A **catalyst** compn. contained Co acetate tetrahydrate, manganese acetate tetrahydrate, zirconium and HBr (as 48% HBr in H2O). A reactor was charged with a **catalyst** compn. contg. Co:Mn:Zr:Br in a 1:1:0.1:2 ratio (0.2% by wt.), 13.0% by wt. 2,2-bis(3,4-dimethylphenyl)propane, 82.4% by wt. AcOH, and 4.4% by wt. H2O and pressurized air was fed to the reactor while the reactor temp. was maintained at 177.degree. and the **oxidn.** was continued for 80 min; the yield of I was 82.8 mol%. In a staged batch **process** the yield of I was 89-90 mol%. With the use of a **catalyst** contg. Co:Mn:Zr:Br in a 1:1:0:2 ratio (no Zr) the yield of I was 5.7 mol%. **Oxidn.** reactor effluent (268 g) was heated to remove the major portion of H2O therefrom and the resulting oil was added to pseudocumene (28 g) and activated carbon (Nuchar SA 20) (3 g) and the mixt. was refluxed at 150-175.degree. for 3-4 h while removing H2O azeotropically to

give 99 wt.% pure isopropylidenebis(**phthalic anhydride**  
) in a yield of 70 mol%.

L7 ANSWER 13 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1989:137505 CAPLUS  
 DOCUMENT NUMBER: 110:137505  
 TITLE: **Process** for high-purity **phthalic anhydride** manufacture by gas-phase **oxidation** of a naphthalene-o-xylene mixture  
 INVENTOR(S): Fuhrmann, Werner; Zur Hausen, Manfred; Krix, Wilfried  
 PATENT ASSIGNEE(S): Huels A.-G., Fed. Rep. Ger.  
 SOURCE: Eur. Pat. Appl., 4 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 294560	A2	19881214	EP 1988-105863	19880413 <--
EP 294560	A3	19900509		
EP 294560	B1	19930728		
R: BE, DE, ES, FR, GB, IT				
DE 3719476	A1	19881229	DE 1987-3719476	19870611 <--
ES 2042628	T3	19931216	ES 1988-105863	19880413 <--
US 4855458	A	19890808	US 1988-203932	19880608 <--
ZA 8804149	A	19890329	ZA 1988-4149	19880610 <--
PRIORITY APPLN. INFO.:			DE 1987-3719476	19870611

OTHER SOURCE(S): CASREACT 110:137505

AB **Phthalic anhydride** (I) is prepd. by making a soln. mixt. comprising 1-80 parts naphthalene and 99-20 parts o-xylene at 0-80.degree., storing this mixt., quickly heating it to 110-180.degree. before **oxidn.**, and injecting the mixt. into a heated air stream at 150-200.degree. over a metal oxide **catalyst** (e.g., V2O5/TiO2). This **process** is conducted under milder reaction conditions (which overcomes many of the problems of higher-temp. **processes**), and produces I contg. 0.1 of the amt. of naphthoquinone impurity which is produced by the **oxidn.** of pure naphthalene.

L7 ANSWER 14 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1989:78063 CAPLUS  
 DOCUMENT NUMBER: 110:78063  
 TITLE: **Catalyst** and **process** for the manufacture of **phthalic anhydride** from naphthalene or 1,2-xylene  
 INVENTOR(S): Hara, Tadanori  
 PATENT ASSIGNEE(S): Nippon Steel Corp., Japan  
 SOURCE: Eur. Pat. Appl., 7 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 286448	A2	19881012	EP 1988-303200	19880411 <--
EP 286448	A3	19890726		
EP 286448	B1	19930929		
EP 286448	B2	19970423		
R: BE, DE, FR, GB, IT, NL				

JP 63253080	A2	19881020	JP 1987-87143	19870410 <--
JP 05015711	B4	19930302		
US 4879387	A	19891107	US 1988-177990	19880405 <--
CA 1311740	A1	19921222	CA 1988-563482	19880407 <--
CN 1030571	A	19890125	CN 1988-102780	19880409 <--
CN 1024003	B	19940316		

PRIORITY APPLN. INFO.: JP 1987-87143 19870410

OTHER SOURCE(S): CASREACT 110:78063

AB **Phthalic anhydride** is prepd. by the **oxidn.** of naphthalene, 1,2-xylene, or both with an O-contg. gas in a **catalyst** bed contg. a 1st **catalyst** packed on the upstream side of the flow of the mixed gas and a 2nd **catalyst** packed on the downstream side of the flow. The 1st **catalyst**, supported on a nonporous inactive carrier, contains a catalytically active component composed of TiO<sub>2</sub> 67-90, V<sub>2</sub>O<sub>5</sub> 8-30, and a Cs compd. 2-5% (molar ratio of Cs compd./mol V<sub>2</sub>O<sub>5</sub> = 0.11-0.2, calcd. as Cs<sub>2</sub>O<sub>4</sub>) and having sp. surface area .gtoreq.20 m<sup>2</sup>/g. The 2nd **catalyst**, supported on a 2nd nonporous inactive carrier, contains a catalytically active component composed of TiO<sub>2</sub> 67-94, V<sub>2</sub>O<sub>5</sub> 5-30, and an alkali metal compd. .ltoreq.0.1% (calcd. as a sulfate); sp. surface area of the catalytically active component is .gtoreq.5 m<sup>2</sup>/g. A 1st **catalyst** component comprising 11.0% V<sub>2</sub>O<sub>5</sub>, 3.0% Cs<sub>2</sub>SO<sub>4</sub>, and having sp. surface area 86 m<sup>2</sup>/g, and a 2nd **catalyst** component comprising 2.0% P<sub>2</sub>O<sub>5</sub>, 20% V<sub>2</sub>O<sub>5</sub>, with the balance (to make up 100%) as TiO<sub>2</sub> were contacted with a gas mixt. of naphthalene and air (naphthalene concn. 70 g/m<sup>3</sup>); velocity 3000 h<sup>-1</sup> at 340-360.degree., producing **phthalic anhydride** in 103% yield.

L7 ANSWER 15 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1988:474092 CAPLUS

DOCUMENT NUMBER: 109:74092

TITLE: **Oxidation catalyst and process** for its preparation

INVENTOR(S): Riva, Alfredo; Cavani, Fabrizio

PATENT ASSIGNEE(S): Alusuisse Italia S.p.A., Italy

SOURCE: Eur. Pat. Appl., 9 pp.

CODEN: EPXXDW

DOCUMENT TYPE: **Patent**

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 264747	A1	19880427	EP 1987-114802	19871009 <--
EP 264747	B1	19910731		
R: CH, DE, FR, LI				
JP 63107744	A2	19880512	JP 1987-261533	19871016 <--
US 4849391	A	19890718	US 1987-110283	19871020 <--
US 4870195	A	19890926	US 1988-204035	19880608 <--

PRIORITY APPLN. INFO.: IT 1986-22064 19861020

US 1987-110283 19871020

AB A **catalyst** formed from V<sub>2</sub>O<sub>5</sub> and TiO<sub>2</sub> of rutile structure is prepd. and used in the **oxidn.** of o-xylene to **phthalic anhydride**. Thus, heating V<sub>2</sub>O<sub>5</sub> in aq. oxalic acid, mixing the soln. with partially hydrolyzed TiCl<sub>4</sub> in aq. HCl soln., adding aq. NH<sub>3</sub> to give pH 1.0 and ppt. metatitanic acid, evapg. the solvent by heating in vacuo, and calcining at 400.degree. gave a **catalyst** having surface area 45 m<sup>2</sup>/g and contg. TiO<sub>2</sub> in rutile form. The **catalyst** was used in the **oxidn.** of o-xylene at 290-330.degree., giving .apprx.99% conversion.

L7 ANSWER 16 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1987:516957 CAPLUS  
 DOCUMENT NUMBER: 107:116957  
 TITLE: **Catalysts** and **process** for the manufacture of anthraquinones  
 INVENTOR(S): Goliaszewski, Alan E.; Salinaro, Richard F.  
 PATENT ASSIGNEE(S): Halcon SD Group, Inc., USA  
 SOURCE: U.S., 4 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4666632	A	19870519	US 1986-883229	19860708 <--
PRIORITY APPLN. INFO.:			US 1986-883229	19860708

AB The title dyes are prep'd. by the cyclocondensation reaction of **phthalic anhydride** and C<sub>6</sub>H<sub>6</sub> (optionally substituted with lower alkyl groups) in presence of a **catalyst** consisting of .gtoreq.1 oxide of Group IVB metals and Group VB metals, which have been pretreated with a sulfate source and calcined at 400-750.degree.. The reaction is carried out at 160-280.degree./8-50 bars with a **phthalic anhydride** in the liq. phase. Suitable **catalysts** have a Hammett acid strength <-16.04. This **process** is more economical than either the **oxidn.** of expensive and difficult-to-purify anthracene feed stocks or the classic Friedel-Crafts acylation reaction, which consumes large quantities of AlCl<sub>3</sub>. Thus, 504 g ZrOCl<sub>2</sub>.8H<sub>2</sub>O was dissolved in 1.6 L H<sub>2</sub>O, and mixed with 0.4 L 28% NH<sub>4</sub>OH over 30 min to ppt. Zr(OH)<sub>4</sub> which was washed, dried at 80% for 15 h, stirred with 0.5 L 1N H<sub>2</sub>SO<sub>4</sub> for 3 h, filtered, and calcined at 620.degree. in air for 3 h to give a **catalyst** compn. having S content 1.2-1.4%, and surface area 100-140 m<sup>2</sup>/g. An autoclave was charged with 80 mL PhMe, 4.72 g **phthalic anhydride**, and 5 g of the above **catalyst**; the autoclave was flushed and pressurized to 35.5 bars with N and operated at 200.degree. for 2 h with stirring. Anal. of the reaction mixt. indicated a **phthalic anhydride** conversion of 10%, with selectivity to methylanthraquinone 57%, and 43% selectivity to byproduct o-bis(methylbenzoyl)benzene.

L7 ANSWER 17 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1986:462704 CAPLUS  
 DOCUMENT NUMBER: 105:62704  
 TITLE: Carboxylic anhydride using improved **catalysts**  
 INVENTOR(S): Saleh, Ramzi Y.; Wachs, Israel E.  
 PATENT ASSIGNEE(S): Exxon Research and Engineering Co. , USA  
 SOURCE: U.S., 14 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4582912	A	19860415	US 1984-655745	19841001 <--
CA 1249990	A1	19890214	CA 1985-490416	19850911 <--
JP 61090737	A2	19860508	JP 1985-217760	19850930 <--
BR 8504809	A	19860722	BR 1985-4809	19850930 <--
EP 180335	A1	19860507	EP 1985-307011	19851001 <--
EP 180335	B1	19900110		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
AT 49407	E	19900115	AT 1985-307011	19851001 <--

PRIORITY APPLN. INFO.: US 1984-655745 19841001  
EP 1985-307011 19851001

OTHER SOURCE(S): CASREACT 105:62704

AB **Catalysts** for the mol. **oxidn.** of a hydrocarbon to form the corresponding carboxylic anhydride are prepd. by forming a **catalyst** precursor by depositing on TiO<sub>2</sub> (anatase form) a monolayer of .gtoreq.1 source of V oxide, calcining the precursor to convert the source into the oxide, depositing another layer of at least 1 V oxide source and .gtoreq.1 compd. of Sb, Ga, Ge, In, Tl, Pb, Se, Te, P, or Bi, convertible to the monoxide, and recalcining the treated support at 150-750.degree. for 0.5-16 h in order not to change the TiO<sub>2</sub> crystal structure from the active anatase form to the less active rutile form. The added reactive metal oxides are present in a ratio of 0.01-1.0 mol per mol V<sub>2</sub>O<sub>5</sub>. The **oxidn. process** is conducted with a feed of o-xylene or naphthalene passed to a reaction zone at a mass flow rate of 20-150 g/m<sup>3</sup> under vapor phase conditions at 200-500.degree.. Thus, 907 mg V<sub>2</sub>O<sub>5</sub>, 2.0 g oxalic acid, and 4.53 g formamide were added to 40 mL water to form V oxalate, which was then added to a mixt. of 20 mL water and 25.0 g anatase powder. The resulting mixt. was heated with stirring at 65.degree., followed by drying in an oven at 110.degree. for 16 h. The solid was then calcined in flowing O at 450.degree. for 2 h, followed by crushing and screening to form 100-mesh particles contg. 3.5 wt.% V<sub>2</sub>O<sub>5</sub>. To 40 mL of water was added V<sub>2</sub>O<sub>5</sub> 0.790, oxalic acid 1.74, and formamide 3.95 g. The soln. was then mixed with 21.0 g of the previously calcined material and 1.09 g Sb<sub>2</sub>O<sub>3</sub> in 20 mL water. The resulting mixt. was heated with stirring to 65.degree., followed by drying at 110.degree. for 16 h. The resulting solid was then calcined in flowing O at 450.degree. for 2 h, followed by crushing and screening to form 20-40 mesh particles. The product had 4.8% Sb<sub>2</sub>O<sub>3</sub> and 6.7% V<sub>2</sub>O<sub>5</sub> on the TiO<sub>2</sub>. At 342.degree., with vapor feed of 1.25 mol% o-xylene in air, at a space velocity of 2760 h<sup>-1</sup>, 100 mol% conversion of xylene, with a **phthalic anhydride** selectivity of 79.3%, was realized. No tolualdehyde or phthalide was obsd.

L7 ANSWER 18 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1985:167316 CAPLUS

DOCUMENT NUMBER: 102:167316

TITLE: **Catalyst** for the preparation of **phthalic anhydride**

INVENTOR(S): Neri, Amleto; Capitanio, Lorenzo; Stefani, Giancarlo

PATENT ASSIGNEE(S): Alusuisse Italia S.p.A., Italy

SOURCE: U.S., 6 pp. Cont.-in-part of U.S. 4,405,505.

CODEN: USXXAM

DOCUMENT TYPE: **Patent**

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4489204	A	19841218	US 1982-453117	19821227 <--
US 4405505	A	19830920	US 1981-247357	19810325 <--
PRIORITY APPLN. INFO.:			IT 1980-21134	19800402
			US 1981-247357	19810325

AB **Phthalic anhydride** (I) [85-44-9] is prepd. in a fixed-bed **process** by **oxidn.** of o-xylene (II) [95-47-6] or naphthalene [91-20-3] in the vapor phase with air (in a ratio of 1:10-1:22) in the presence of a 1:5-1:20 V<sub>2</sub>O<sub>5</sub>-TiO<sub>2</sub> **catalyst** distributed on a support made of open arc-shaped particles (half rings), where >50% TiO<sub>2</sub> has pores with radius 500-1500 .ANG.. The **catalyst** system affords higher **catalyst** potentiality, selectivity, activity, and durability than conventional **catalysts** and reduces energy and investment costs. Thus, 1300 mL

water, 297 g anatase TiO<sub>2</sub> (total pore vol. 0.504 cm<sup>3</sup>/g), 240 g thiourea, 155 mL vanadyl oxalate soln. (14.7 g V<sub>2</sub>O<sub>5</sub>/100 mL soln.), and 1.37 g KCl were mixed, fed at 210.degree. over 2000 g half-ring supports at 450 mL/h, and heated 1 h at 210.degree. to yield 2316 g **catalyst** (15.8% active portion on support). After .apprx.2 wk of increasing flow rate, a max. air/II mixt. (4640 L/h air and 300 g/h II) was attained and after 1 mo was passed over a 1040-g **catalyst** sample at 380.degree. to yield 116% I based on 100% II supplied. A similar conventional **catalyst** system had to operate at higher temps. for the same vol. of **catalyst** and feed, thereby causing secondary reactions, decreasing I yield, and forming undesired rutile TiO<sub>2</sub>.

L7 ANSWER 19 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1982:545423 CAPLUS

DOCUMENT NUMBER: 97:145423

TITLE: **Phthalic anhydride**

INVENTOR(S): Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzkmnecht, Bernhard; Wintermantel, Klaus

PATENT ASSIGNEE(S): BASF A.-G., Fed. Rep. Ger.

SOURCE: Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DOCUMENT TYPE: **Patent**

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 52745	A1	19820602	EP 1981-108265	19811013 <--
EP 52745	B1	19850116		
R: AT, BE, DE, IT				
DE 3044518	A1	19820701	DE 1980-3044518	19801126 <--
AT 11287	E	19850215	AT 1981-108265	19811013 <--
US 4369327	A	19830118	US 1981-313177	19811020 <--
JP 57109775	A2	19820708	JP 1981-182397	19811116 <--
PRIORITY APPLN. INFO.:			DE 1980-3044518	19801126
			EP 1981-108265	19811013

AB **phthalic anhydride** (I) [85-44-9] is manufd. by the catalytic air oxidn. of naphthalene (II) [91-20-3] or o-xylene (III) [95-47-6] by passing a preheated mixt. of air and II or III through a **catalyst** bed and cooling the effluents to sep. solid I. The economy and energy recovery of the **process** is improved by using heat from the I separator to preheat the air, the air-II mixt., or the air-III mixt.

L7 ANSWER 20 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1976:407758 CAPLUS

DOCUMENT NUMBER: 85:7758

TITLE: Carrying out chemical reactions in a fluidized bed

INVENTOR(S): Slinko, M. G.

PATENT ASSIGNEE(S): UCB S. A., Belg.

SOURCE: U. S. Reissue, 4 pp. Reissue of U.S. 3,784,561.

CODEN: UUXXA2

DOCUMENT TYPE: **Patent**

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 28648	E	19751209	US 1974-495519	19740807 <--
US 3784561	A	19740108	US 1972-216774	19720110 <--



GB 1382991 A 19750205 GB 1971-1485 19720111 <--  
 PRIORITY APPLN. INFO.: GB 1971-1485 19710112  
 US 1972-216774 19720110

AB An improved **process** is described for carrying out a catalytic reaction in a fluidized-bed reactor contg. heat exchange means and filling elements. The filling elements used are windings of rigid wire, the vol. of which is equal to 3-10% of the **catalyst** vol. under working conditions. The speed of displacement of the gaseous constituents through the reactor is 0.40-0.90 times the speed of entrainment of the fluidized **catalyst** particle. The rigid wire windings which are made of glass, ceramic materials, inert or catalytically active metals and metal alloys, are stacked regularly or irregularly in the zone of the reactor reserved for the **catalyst**. These measures considerably reduce back-mixing while not reducing axial and radial heat exchange between the **catalyst** particles and the walls of the heat-exchange means. The homogeneity of the bed is greatly improved and the gas-circulation turbulence in the reactor is substantially reduced. This **process** can be used for the prepn. of acrylonitrile from propylene and ammonia, the catalytic **oxidn.** of naphthalene to **phthalic anhydride** and benzene to maleic anhydride.

L7 ANSWER 21 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1975:31147 CAPLUS

DOCUMENT NUMBER: 82:31147

TITLE: **Phthalic anhydride** by xylene **oxidation**

INVENTOR(S): Auroy, Michel; Goharel, Maurice; Zoulalian, Jacques

PATENT ASSIGNEE(S): Rhone-Progil

SOURCE: Ger. Offen., 13 pp.

CODEN: GWXXBX

DOCUMENT TYPE: **Patent**

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2417145	A1	19741024	DE 1974-2417145	19740409 <--
DE 2417145	B2	19810527		
FR 2225413	A1	19741108	FR 1973-13072	19730411 <--
NL 7404822	A	19741015	NL 1974-4822	19740409 <--
IT 1004182	A	19760710	IT 1974-50266	19740409 <--
BE 813558	A1	19741010	BE 1974-143065	19740410 <--
JP 50040539	A2	19750414	JP 1974-40625	19740410 <--
CA 1032547	A1	19780606	CA 1974-197329	19740410 <--
GB 1422516	A	19760128	GB 1974-16290	19740411 <--
US 4119645	A	19781010	US 1977-817139	19770720 <--
PRIORITY APPLN. INFO.:			FR 1973-13072	19730411
			US 1974-460176	19740411

AB **Phthalic anhydride** (I) of purity >99.7% was manufd. in .apprx.103% total yield and at total I loss 1.5% by air **oxidn.** of o-xylene (II) in a bundle reactor contg. 4650 or 13,260 tubes of diam. 21 mm and length 1.5-2 mm and filled with **catalyst** spheres (diam. 4-7 mm) of glazed Al<sub>2</sub>O<sub>3</sub> contg. V oxide and TiO<sub>2</sub> at 372-7.degree., air-II wt. ratio 20-2:1, and 210-40 g II/hr/l. **catalyst**. The product was condensed, molten, stirred with .apprx.0.007% (based on crude I) Na<sub>2</sub>CO<sub>3</sub> and .apprx.0.01% NaNO<sub>3</sub> 6 hr at 280.degree., and subjected to fractionation in 2 columns in series and thin-layer evapn. at 275.degree./200 mm. The gaseous products were passed at 10,500 std. m<sup>3</sup>/hr and 260-400.degree. through a 0.3% Pd/Al<sub>2</sub>O<sub>3</sub>-contg. aftercombustion reactor for recovery of heat to be used, together with that of the **oxidn.** . steps in the **process**.

L7 ANSWER 22 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1974:147534 CAPLUS

DOCUMENT NUMBER: 80:147534

TITLE: Coke suppressing additive

INVENTOR(S): Peck, Reese A.; Wilson, Raymond F.

PATENT ASSIGNEE(S): Texaco Inc.

SOURCE: U.S., 5 pp. Continuation-in-part of U.S. 3,591,484 (CA 75:89807n).

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3788970	A	19740129	US 1970-49513	19700624 <--
US 3591484	A	19710706	US 1968-787566	19681227 <--

PRIORITY APPLN. INFO.: US 1968-787566 19681227

AB Coke formation in a hydrocracking **process** is suppressed by an additive prep'd. by contacting an oxidized heavy hydrocarbon fraction with an arom. polycarboxylic acid, anhydride, or ester in the presence of an oxidant, and treating the product with H. Thus, San Ardo crude oil (12.6.degree. API, 9.4% C residue, 60.1% b. >850.degree.F) was oxidized by air (350.degree.F, 50 psig, 6000 ft<sup>3</sup> air/bbl, liq. space velocity 1.0 hr-1) with a K<sub>2</sub>SO<sub>4</sub>-promoted V<sub>2</sub>O<sub>5</sub>-Al<sub>2</sub>O<sub>3</sub> **catalyst**, treated with 1% **phthalic anhydride** (300.degree.F, 600 psig for 3 hr), and with H (750.degree.F, 1500 psig H, 2 hr) to yield 6.4% of a filterable, carbon-like polymer. The presence of this condensation product reduced coke formation from 4.6 to 0.0% during hydrocracking of the same crude oil at 725.degree.F and 1500 psig of H for 15 hr.

L7 ANSWER 23 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1971:522758 CAPLUS

DOCUMENT NUMBER: 75:122758

TITLE: **Catalyst** consisting of porous solid particles carrying a glass of vanadium pentoxide and potassium pyrosulfate

INVENTOR(S): Markham, Harry; Pinchbeck, Peter H.; Gaynor, Phillippe P.

PATENT ASSIGNEE(S): United Coke and Chemicals Co. Ltd.

SOURCE: U.S., 3 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3591525	A	19710706	US 1969-811559	19690328 <--

PRIORITY APPLN. INFO.: US 1969-811559 19690328

AB A **catalyst** consisting of silica gel particles carrying a glass of vanadium pentoxide and potassium pyrosulfate was prep'd. by continuously introducing a mixt., preheated to at least 100.degree., of silica gel particles and particles of the glass in a stream of air into a fluidized bed of the same mixt. at 300-400.degree.. Product particles were continuously removed from the top of the bed. In the production of **phthalic anhydride** from naphthalene with the **catalyst**, the proportion of naphthoquinone (I) produced in an undesirable side reaction was 0.4% initially and 0.9% after 6 mo. With a similar **catalyst** produced by a batch **process**, I was 0.8% initially and 2.0% after 6 mo.

L7 ANSWER 24 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1971:489807 CAPLUS  
 DOCUMENT NUMBER: 75:89807  
 TITLE: Additive for suppressing coke formation in  
 hydrocracking **process**  
 INVENTOR(S): Peck, Reese A.; Wilson, Raymond F.  
 PATENT ASSIGNEE(S): Texaco Inc.  
 SOURCE: U.S., 5 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3591484	A	19710706	US 1968-787566	19681227 <--
US 3788970	A	19740129	US 1970-49513	19700624 <--
PRIORITY APPLN. INFO.:			US 1968-787566	19681227

AB A polymeric material (I) was prep'd. by oxidizing a heavy hydrocarbon fraction, contacting the oxidized fraction with an aromatic polycarboxylic acid anhydride and an oxidant, and forming I thermally in the presence of H. A San Ardo crude oil was oxidized continuously with a K<sub>2</sub>SO<sub>4</sub>-promoted V<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> **catalyst** at 350.degree.F, 50 lb/in.<sup>2</sup> air, 1.0 liq. hourly space velocity, and air rate 6000 ft<sup>3</sup>/bbl and then charged with 1 wt. % **phthalic anhydride** to an autoclave for 3 hr at 600 lb/in.<sup>2</sup> air and 300.degree.F, after which the oil was contacted with H 2 hr at 1500 lb/in.<sup>2</sup> . On cooling I (representing 6.4% of the original crude) was collected by filtration. In batch thermal hydrocracking of San Ardo crude oil at 725.degree.F, 1500 lb/in.<sup>2</sup> H, and 15 hr reaction time, 4.6% coke was formed. In the presence of 6.4% I, no coke was formed.

L7 ANSWER 25 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1971:489806 CAPLUS  
 DOCUMENT NUMBER: 75:89806  
 TITLE: Hydrocracking **process** for increasing the  
 yield of lower-boiling hydrocarbons  
 INVENTOR(S): Peck, Reese A.; Wilson, Raymond F.  
 PATENT ASSIGNEE(S): Texaco Inc.  
 SOURCE: U.S., 5 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3591486	A	19710706	US 1968-787561	19681227 <--
PRIORITY APPLN. INFO.:			US 1968-787561	19681227

AB High-boiling heteroatom-contg. fractions were converted to low-boiling products by the combination of an **oxidn.** step and a treatment with H in the presence of an aromatic polycarboxylic comp'd. A San Ardo crude oil was contacted continuously with a K<sub>2</sub>SO<sub>4</sub>-promoted V<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> **catalyst** at 350.degree.F, 50 lb/in.<sup>2</sup> air, 1.0 liq. hourly space velocity and an air rate of 6000 ft<sup>3</sup>/bbl. The oxidized oil and 1 wt. % **phthalic anhydride** (I) was held 2 hr at 750.degree.F and 1500 lb H/in.<sup>2</sup> Comparison with the same expt. in the absence of I gave the following results (San Ardo crude oil, with I, without I): %S, 2.3, 1.15, 1.56; %N, 1.08, 0.73, 0.89; 850.degree.-F + conversion, 0, 26.7, 55.5; yield C<sub>4</sub>-400.degree.F, 1.3, 14.4, 7.7.

L7 ANSWER 26 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1968:104769 CAPLUS  
 DOCUMENT NUMBER: 68:104769  
 TITLE: Catalytic reactor tube liner  
 INVENTOR(S): Peters, Hans  
 PATENT ASSIGNEE(S): Reichhold Chemicals, Inc.  
 SOURCE: U.S., 3 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3353923		19671121		

PRIORITY APPLN. INFO.: DE 19620525 <--

AB In the production of org. polybasic acid anhydride by catalytic **oxidn.** of aromatic hydrocarbon with an oxidizing gas, the yield can be increased by 5-15%, when the reaction pipes contg. the **catalyst** are coated with amorphous, vitreous polymeric chelate compds. based on cyanic compds. (tetracyanoethylene) by wet **process** and subsequent heating at 200-300.degree. or with const.-valence metals or metal oxides (V, W, Mo, Be, Ta, Ti, Cr, Al) by electroplating or deposition with a flame jet. Thus, fused naphthalene at a flow rate of 80 g./hr. (air-naphthalene ratio 25:1, 420.degree.) was passed over a **catalyst** contained in a steel pipe welded to a heat-proof steel pipe which was coated on inside with Mo and V2O5 by flame jet. The main reaction zone was maintained at 520.degree.. The yield of **phthalic anhydride** was 5% higher than obtained with conventional app.

L7 ANSWER 27 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1966:410089 CAPLUS  
 DOCUMENT NUMBER: 65:10089  
 ORIGINAL REFERENCE NO.: 65:1815b-c,1816a  
 TITLE: Heat control in catalytic **oxidation process**  
 INVENTOR(S): Lidov, Rex E.  
 PATENT ASSIGNEE(S): Halcon International, Inc.  
 SOURCE: 5 pp.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3247279		19660419	US	19620212 <--

AB Vapor-phase partial **oxidn.** of org. compds. is conducted in elongated tubular reactors arranged in a tube-and-shell heat-exchanger system so that the heat of reaction is removed. In many cases, the reaction produces a localized, very high-temp. zone from which heat must be removed rapidly if temp. control is to be maintained. The present invention eliminates the necessity for sepg. the temp. zones which require an uneconomic multireactor system. For example, a feed mixt. of C10H8 vapor 1 and air 30 parts by wt., pre-heated to 250-350.degree., is introduced into a reactor fitted with an inlet header, reactor tubes loaded with a **catalyst** (VO), outlet header, and a reaction product outlet. Suitable baffles, thermocouples, and connections are provided to control the flow of coolant, in this case molten NaCl. Both phthalic and maleic anhydrides are recovered, the former in very high yield and exceptional purity.

L7 ANSWER 28 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1963:468945 CAPLUS  
 DOCUMENT NUMBER: 59:68945  
 ORIGINAL REFERENCE NO.: 59:12713f-h,12714a  
 TITLE: Aromatic polycarboxylic acids  
 INVENTOR(S): Saffer, Alfred; Barker, Robert S.  
 PATENT ASSIGNEE(S): Mid-Century Corp.  
 SOURCE: 9 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3089906		19630514	US	19580421 <--

AB Continuation-in-part of U.S. 2,833,816 (CA 53, 1260e). Alkylbenzenes are oxidized by mol. O in the presence of a Br-promoted Mn, Mo, or Co **catalyst** in an aliphatic acid at 300-500.degree.F. and autogenous pressure. The reaction temp. and pressure and undesirable accumulation of H<sub>2</sub>O and HCO<sub>2</sub>H are controlled by withdrawal of uncondensed vapors. The promoter may be Br, HBr, a salt, or org. bromide. Thus, a mixt. contg. 85% o-, 9.0% m-, and 4% p-xylene and 2% PhEt is oxidized by passing air into a mixt. of xylene 408, AcOH 810, and MnBr<sub>2</sub> 7.0 parts at 350.degree.F. and 200 lb./in.<sup>2</sup> until the temp. reaches 400.degree.F., then withdrawing vapors through a condenser at 120-5.degree.F. and returning condensate to the reaction. After 30-40 min., the pressure is increased to 450 lb./ in.<sup>2</sup> to maintain a temp. of 400.degree.F. When the O content of the off-gas increases from 2-4% to 6-8%, air input is stopped, the pressure reduced, and the mixt. cooled to 325.degree.F. and removed. The mixt. is then cooled to 225.degree.F. and filtered to give 64.0 parts of a mixt. of 69% o- and 31% p-C<sub>6</sub>H<sub>4</sub>(CO<sub>2</sub>H)<sub>2</sub>. Distn. of the filtrate yields BzOH and 360 parts **phthalic anhydride**, for a total phthalic yield of 117 wt.-% based on xylene. Similar **oxidn.** of 95% p- and 5% m-xylene 488, caprylic acid 1250, Mn(OAc)<sub>2</sub> 7, and NH<sub>4</sub>Br 5 parts at 380.degree.F. gives 125 wt.-% of a mixt. of 94% p- and 6% m-C<sub>6</sub>H<sub>4</sub>(CO<sub>2</sub>H)<sub>2</sub>. **Oxidn.** of pseudocumene at 420.degree.F. gives 96 wt.-% trimellitic acid, while mesitylene at 410-20.degree.F. gives 85% theory trimesic acid. The **process** is adaptable to a wide variety of feedstocks, and gives high O utilization. U.S. 3,089,907 (Cl. 260-524); 9 pp. Describes control of the **oxidn.** reaction by varying the rate of air input rather than the reactor pressure.

L7 ANSWER 29 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1963:468939 CAPLUS  
 DOCUMENT NUMBER: 59:68939  
 ORIGINAL REFERENCE NO.: 59:12711c-f  
 TITLE: Recovery of phthalic acids  
 INVENTOR(S): Baldwin, Richard H.; Spiller A., Charles, Jr.  
 PATENT ASSIGNEE(S): Standard Oil Co., Indiana  
 SOURCE: 7 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3082250		19630319	US	19580505 <--

AB Mixt. of the 3 isomeric phthalic acids obtained by **oxidn.** of mixed xylenes is sepd. into individual isomers of sufficient purity to permit their use in the prepn. of resins other than fiberforming polymers. Thus, the catalytic liquid phase **oxidn.** with air of 8000 parts by wt. of a xylene mixt. contg. o-xylene 23.6, m-xylene 45.4, p-xylene 18,

and PhMe plus PhEt 13% by wt., in 12,000 parts AcOH and in the presence of Br and a metal oxidizing **catalyst** gave a reaction mixt. contg. phthalic acid (I), isophthalic acid (II), terephthalic acid (III), BzOH, toluic acid, AcOH, **catalyst**, and nonorg. by-products. The mixt. was cooled to 140.degree.F. and mixed phthalic acids (IV) filtered off. The filter cake was washed with 100.degree.F. AcOH and dried. IV contained I 15, II 55, and III 30% by wt. Wet AcOH was distd. from the combined wash and mother liquors to give a residue contg. aromatic acids, **catalyst**, and tar. The aromatic portion consisted of BzOH 34.6, toluic acid 2.4, I 52.5, II 8, and III 2.5% by wt. Further distn. at 400 mm. caused dehydration of I to **phthalic anhydride** (V), and permitted its sepn. from H<sub>2</sub>O, BzOH, and toluic acid. Slurrying IV with 1.5 parts H<sub>2</sub>O at 200-10.degree.F. and cooling to 120-30.degree.F. caused crystn. of 75-80% of I, recovered by filtration. The remaining I was recovered by concg. the mother liquors or by distg. the H<sub>2</sub>O, dehydrating I, and recovering V by distn. Alternately, IV was heated to 200-10.degree. to dehydrate I and the resulting mixt. extd. with C<sub>6</sub>H<sub>6</sub>, which dissolved V, to give II and III. The mixt. of II and III was sepd. using selective solvents such as AcOH, 70% H<sub>2</sub>SO<sub>4</sub>, or MeOH. Alternately, the Ba salts were prepd. from BaCO<sub>3</sub> and sepd. by filtration of H<sub>2</sub>O-insol. Ba terephthalate. A continuous **process** incorporating the recovery **process** is described.

L7 ANSWER 30 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1963:406217 CAPLUS  
 DOCUMENT NUMBER: 59:6217  
 ORIGINAL REFERENCE NO.: 59:1135d-e  
 TITLE: Reactor for vapor-phase catalysis  
 INVENTOR(S): Fenske, Merrill R.; Jones, Jennings H.  
 PATENT ASSIGNEE(S): Esso Research and Engineering Co.  
 SOURCE: 9 pp.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3086852		19630423	US	19580327 <--
AB	A stream of dispersed particulate solids is used to add or remove reaction heat by means of intimate contact with the reaction vapors and excellent heat transfer between the solid and vapor streams. These solids flow through zones of catalytic material which may be in the form of clusters of solid particles or screens, wires, gages, or metal strips. For example, in the vaporphase <b>oxidn.</b> of o-xylene to <b>phthalic anhydride</b> , the raining solids are fine alumina or mullite in the range of 100-300 .mu.. The <b>catalyst</b> , V <sub>2</sub> O <sub>5</sub> , is contained in wire baskets. The temp. in the <b>catalyst</b> zone is about 700-850.degree.F. and the pressure 1-3 atm. The solids serve to remove the exothermic heat of reaction, the raining solids being about 50-150.degree.F. cooler than the <b>catalyst</b> bed.			

L7 ANSWER 31 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1963:403257 CAPLUS  
 DOCUMENT NUMBER: 59:3257  
 ORIGINAL REFERENCE NO.: 59:516c-d  
 TITLE: **Phthalic anhydride purification process**  
 INVENTOR(S): Tomlinson, Richard W.  
 PATENT ASSIGNEE(S): Imperial Chemical Industries Ltd.  
 SOURCE: 3 pp.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 916214		19630123	GB	19600530 <--
US 3155688		1964	US	<--

AB KOH was used as a condensing agent in the purification of **phthalic anhydride** in N atm. KOH 0.07 in 50% aq. soln. was added to 100 parts crude **phthalic anhydride** prepd. by catalytic air oxidn. of naphthalene (V **catalyst**). The mixt. was heated to 230.degree. with stirring, maintained at 230 .+-. 3.degree. for 6 hrs., and distd. through a fractionating column (80-100 mm. Hg) to give 90.2 parts **phthalic anhydride**, m. 131.0.degree., color 50 (APHA scale). The total **process** was carried out in N atm.

L7 ANSWER 32 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1961:76007 CAPLUS  
 DOCUMENT NUMBER: 55:76007  
 ORIGINAL REFERENCE NO.: 55:14391a-c  
 TITLE: Catalytic **oxidation** of hydrocarbons  
 INVENTOR(S): Benichou, Samuel; Beyrard, Norbert R.; Benzimra, Georges D.  
 PATENT ASSIGNEE(S): Societe d'etudes de techniques industrielles nouvelles  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 1209169		19600229	FR	<--
DE 1210791			DE	
GB 912373			GB	
GB 912517			GB	
GB 925173			GB	
US 3072465		1963	US	<--
US 3180877		1965	US	<--

AB A **process** for the air **oxidn.** of hydrocarbons within temp. limits in successively larger **catalyst** chambers was described. C<sub>10</sub>H<sub>8</sub> 60 kg./hr. was injected into 2000 cu. m. air. The mixt. was heated to 350.degree. and was passed through a bed of tableted **catalyst**. Part of the C<sub>10</sub>H<sub>8</sub> was converted to **phthalic anhydride** (I) and the temp. rose to 370.degree.. The mixt. was cooled to 350.degree. by the injection of water before passing to the next chamber. A 95% yield of I was obtained after similar passage through 6 more chambers, with cooling after each stage.

L7 ANSWER 33 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1960:33928 CAPLUS  
 DOCUMENT NUMBER: 54:33928  
 ORIGINAL REFERENCE NO.: 54:6552i,6553a-b  
 TITLE: Fumaric acid  
 INVENTOR(S): Stefaniak, Walter J.  
 PATENT ASSIGNEE(S): Allied Chemical Corp.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2914559		19591124	US	<--

AB A **process** was described for the conversion of maleic acid (I) to fumaric acid (II). High yields of II were obtained if an aq. soln. of I

was heated to 70-110.degree. in the presence of  $\text{BrO}_3^-$  ions as **catalyst**. Addn. of  $\text{BO}_3^-$  ions increased the efficiency of the bromate **catalyst**. Strong mineral acids inhibited the isomerization of I to II. Thus, maleic anhydride (III) 950 was added to  $\text{KBrO}_3$  (IV) 2.5 in  $\text{H}_2\text{O}$  1550 parts, kept initially at 95.degree., at such a rate that the temp. was held between 100-105.degree.. After addn. of IV 2.5 addnl. parts the soln. was kept 1 hr. at 105-10.degree.. Then the batch was cooled to 15-20.degree., the ppt. washed, and dried to yield II 1068 parts. A 5% soln. of the product in EtOH had a color of 10 on the Hazen scale. A soln. contg. III 950 in  $\text{H}_2\text{O}$  950 was charged at 100-5.degree. within 30 min. with a **catalyst** soln. contg. IV 10 and  $\text{NaBO}_3 \cdot \text{H}_2\text{O}$  (V) 2.5 in  $\text{H}_2\text{O}$  150 parts. From the mixt. II 1090 parts was isolated as described above. With **catalyst** solns. contg. IV and V the conversion of I to II was carried out in crude solns. of I obtained by trapping in the **catalyst** solns. the gaseous products from the catalytic oxidn. of  $\text{C}_6\text{H}_6$  to III or by trapping the residual gaseous products resulting from the synthesis of **phthalic anhydride** (VI) from naphthalene after removal of VI. The II obtained by these **processes** had a brownish color but treatment with C yielded II with a very satisfactory color.

L7 ANSWER 34 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1958:50867 CAPLUS  
 DOCUMENT NUMBER: 52:50867  
 ORIGINAL REFERENCE NO.: 52:9212d-f  
 TITLE: **Phthalic anhydride**  
 INVENTOR(S): Johannsen, Adolf; Luehdemann, Rolf  
 PATENT ASSIGNEE(S): Badische Anilin- & Soda-Fabrik Akt.-Ges.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2815352		19571203	US	

AB An improvement in the **process** for producing **phthalic anhydride** (I) by the **oxidation** of naphthalene (II) with air over a fluidized V2O5 **catalyst** is described. In this **process** unreacted II is recycled, and large chambers for the sepn. of I are unnecessary. Thus, in a continuous **process** II is oxidized in vapor phase with air in a fluidized solid V2O5 **catalyst** zone at 345.degree. to produce a vaporous-gaseous reaction mixt. (III) contg. I. III is cooled to not below 132.degree. to condense I in a liquid form. I is sepd. The residual III contg. unreacted II and uncondensed I is returned to the **catalyst** zone along with fresh II and air. Advantages and applications of the **process** are discussed.

L7 ANSWER 35 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1954:7407 CAPLUS  
 DOCUMENT NUMBER: 48:7407  
 ORIGINAL REFERENCE NO.: 48:1421i,1422a  
 TITLE: **Oxidation of hydrocarbons**  
 INVENTOR(S): Keith, Percival C.  
 PATENT ASSIGNEE(S): M. W. Kellogg Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2616898 19521104 US <--  
 AB CH<sub>4</sub> is oxidized to H<sub>2</sub>CO or C<sub>10</sub>H<sub>8</sub>, to .omicron.-C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O in a continuous fluid flow **process** by bringing the hydrocarbon vapors at a high velocity and at about 1000.degree.F. into contact with CuO in 1 reactor, sepg. the org. product from reduced CuO, reoxidizing the **catalyst** with air in a 2nd reactor, and recycling it to the **process**.

L7 ANSWER 36 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1952:40587 CAPLUS  
 DOCUMENT NUMBER: 46:40587  
 ORIGINAL REFERENCE NO.: 46:6876e-h  
 TITLE: Apparatus and **process** for circulating powdered solid in chemical treatment  
 INVENTOR(S): Hemminger, Charles E.  
 PATENT ASSIGNEE(S): Standard Oil Development Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2595254		19520506	US	<--

AB A **process** is described in which gaseous reactants are brought into contact with a powd. material in the reaction zone. The reactants flow upwardly and maintain, in suspension, a solid in powd. form. The powder acts as a heat-absorbing or releasing medium and thus tends to maintain the reactants within some given desired temp. range which is optimum for the reaction in question. This continuous **process** is adaptable to a wide range of vapor-phase chem. reactions. Examples include, **oxidation** of naphthalene to **phthalic anhydride**, **oxidation** of SO<sub>2</sub> to SO<sub>3</sub> by V oxide, hydrogenation of hydrocarbons, Fischer synthesis, MeOH synthesis, H production from CH<sub>4</sub>, **oxidation** of C<sub>3</sub>H<sub>8</sub> and C<sub>2</sub>H<sub>6</sub> to the corresponding alcs., cracking of hydrocarbons, synthesis of phosgene, bauxite treatment of naphthas, NH<sub>3</sub> from the oxides of N, chlorination of hydrocarbons, nitration of C<sub>6</sub>H<sub>6</sub>, isomerization of C<sub>4</sub>H<sub>10</sub>, polymerization of olefins, and cracking triisobutylene. The conditions of temp. and pressure are based on the individual **process**, and it is preferable to use a **process** which does not poison the **catalyst**.

L7 ANSWER 37 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1951:27105 CAPLUS  
 DOCUMENT NUMBER: 45:27105  
 ORIGINAL REFERENCE NO.: 45:4743h-i  
 TITLE: Controlled catalytic **oxidation**  
 INVENTOR(S): Rollman, Walter F.  
 PATENT ASSIGNEE(S): Standard Oil Development Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2526689		19501024	US	<--

AB .omicron.-C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O may be prepd. by partial selective **oxidation** of C<sub>10</sub>H<sub>8</sub> or .omicron.-xylene. Feed vapor is fed concurrently with the suspended **catalyst** through a reactor at 800-1100.degree.F. Feed concns. of 1.5-2.5 mol.-% are used, and the contact time is very short. The mixt. is abruptly sepd. in a separator and vapor stripped from the **catalyst**, which is reactivated and returned to the **process**

. This **process** is also applicable for the conversion of .omicron.-toluic acid to phthalic acid, C<sub>2</sub>H<sub>4</sub> to C<sub>2</sub>H<sub>4</sub>O, C<sub>3</sub>H<sub>6</sub> to acrolein, and the **oxidation** of side-chain heterocyclic compds. to their carboxylic derivatives.

L7 ANSWER 38 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1950:41730 CAPLUS  
 DOCUMENT NUMBER: 44:41730  
 ORIGINAL REFERENCE NO.: 44:8022e-h  
 TITLE: Vanadium pentoxide **catalysts**  
 INVENTOR(S): Cooper, Wm. C.  
 PATENT ASSIGNEE(S): Pittsburgh Coke and Chemical Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2510803		19500606	US	<--

AB A V<sub>2</sub>O<sub>5</sub> **catalyst** for vapor-phase **oxidation** of C<sub>10</sub>H<sub>8</sub> to **phthalic anhydride** and C<sub>6</sub>H<sub>6</sub> to maleic anhydride is prepd. by coating an inert carrier with V<sub>2</sub>O<sub>5</sub> from a colloidal soln. under conditions such that the water is evapd. as fast as the soln. is brought into contact with the carrier particles. The catalytic coating so produced is more adherent and of greater and more uniform catalytic activity than that of previous **catalysts**. E.g., 60 g. of NH<sub>4</sub> vanadate is heated cautiously to drive off NH<sub>3</sub> and reoxidize any reduced V compds. The mass is then heated to 850.degree., and the molten material is slowly poured with vigorous agitation into 3000 ml. of distd. H<sub>2</sub>O having a temp. of 20.degree.. The soln. is filtered to give a stable, deep reddish brown soln. contg. about 1.5% V<sub>2</sub>O<sub>5</sub>. Then 100 g. of 4-8 mesh fused Al<sub>2</sub>O<sub>3</sub> is placed in a 500-ml. flask rotating at 10-12 r.p.m. The colloidal soln. is added dropwise while the water in the soln. is evapd. by application of heat to the bottom of the flask, in such a manner that no liquid is accumulated on the bottom of the flask. When 300 ml. of soln. has been added, the operation is complete. The Al<sub>2</sub>O<sub>3</sub> particles are coated with a lustrous, gun-metal blue layer of V<sub>2</sub>O<sub>5</sub> amounting to about 4% of the total product. Other examples include prepn. of a **catalyst** for a fluidized catalytic **process**. The concn. of colloidal soln. may be 0.1-5% V<sub>2</sub>O<sub>5</sub>, preferably 1-3%. The color of the **catalyst** changes with the extent of drying of the coat, from gun-metal blue to red brown and finally to orange or yellow. It is preferable to stop the heating before reaching orange or yellow. Other methods of prepn. of the colloidal soln. may be used, as well as other colloidal materials in addn. to V<sub>2</sub>O<sub>5</sub>.

L7 ANSWER 39 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1950:12757 CAPLUS  
 DOCUMENT NUMBER: 44:12757  
 ORIGINAL REFERENCE NO.: 44:2561i,2562a-b  
 TITLE: Controlled catalytic vapor-phase **process**  
 INVENTOR(S): Longwell, John P.  
 PATENT ASSIGNEE(S): Standard Oil Development Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2491500		19491220	US	<--

AB A **process** is described for improved control of the time of

contact and of temp. in the partial **oxidation** of aromatic hydrocarbons to o-C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O in the vapor phase. In an elongated cylindrical converter, 20-40-mesh spheres, of fused V<sub>2</sub>O<sub>5</sub> are poured down through a rising stream of reactant vapors introduced in the lower half of the converter. Steam is used to strip vapor from the **catalyst** before it reaches a collecting and heat-exchange zone at the bottom. The **catalyst** is returned to the top of the converter through a transfer line with the aid of steam. With 0.8 mol.-% C<sub>10</sub>H<sub>8</sub> in the feed, a contact time of 0.5 sec., and av. conversion temp. 1050.degree., the yield was 87 mol.-% C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O and 10 mol.-% maleic anhydride.

L7 ANSWER 40 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1950:10218 CAPLUS  
 DOCUMENT NUMBER: 44:10218  
 ORIGINAL REFERENCE NO.: 44:2022f-h  
 TITLE: **Oxidation** of aromatic hydrocarbons  
 INVENTOR(S): Welty, Alfred B., Jr.; Rollman, Walter F.  
 PATENT ASSIGNEE(S): Standard Oil Development Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2489346		19491129	US	<--

AB The same method of heat control is applied to a similar **oxidation process** in which the V oxide **catalyst** is in the form of a 10-60, preferably 20-40, mesh powder, consisting of fused microspheres. The **catalyst** may be prepd. by fusing V oxide with or without a promoter, such as K sulfate, cooling the melt on a quartz surface in thin sheets, grinding and screening, passing the particles of the desired size slowly through a quartz tube at 1700-1800.degree.F., and allowing the fused particles to solidify by a free fall of several ft. through cool air. The **catalyst** is maintained in a turbulent condition by the upward flow of the feed gases at 1-10 ft./sec.

L7 ANSWER 41 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1949:39024 CAPLUS  
 DOCUMENT NUMBER: 43:39024  
 ORIGINAL REFERENCE NO.: 43:7046f-i,7047a-d  
 TITLE: Dicarboxylic acid anhydrides  
 INVENTOR(S): Levine, Irving E.; Claussen, Wm. H.  
 PATENT ASSIGNEE(S): California Research Corp.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2474002		19490621	US	<--

AB **Phthalic anhydride** (I) is produced from a hydrocarbon mixt., which consists substantially of compds. not convertible by direct **oxidation** to the anhydride, in a 5-stage **process** comprising: (1) aromatizing a petroleum fraction or the like to obtain a reaction mixt. of I-convertible and I-inconvertible hydrocarbons consisting of aromatic compds. and usually also nonaromatic compds.; (2) sepg. from the reaction mixt. an aromatic fraction consisting predominantly of I-inconvertible compds.; (3) treating the fraction from step 2 nondestructively to obtain mixed alkylbenzenes contg. a minor proportion of I-inconvertible with a major proportion of I-convertible alkylbenzenes; (4) treating the alkylbenzenes from step 3 to eliminate the

I-inconvertible alkylbenzenes by destructive **oxidation**; and (5) producing I from the convertible alkylbenzenes. A naphthenic hydrocarbon mixt. produced from naphthene-type petroleum crude oils and consisting essentially of hydrocarbons having 6-12 C atoms in the mol. is a desirable feed stock. The fraction should boil preferably within the approx. range 82-160.degree.. The mixt. sepd. in step 2 should contain preferably less than 15% nonaromatic hydrocarbons, and should boil in the approx. range 135-146.degree.. Superfractionation is preferred for the sepn. in step 3, and should provide a fraction contg. about 15% I-inconvertible hydrocarbons. I contg. 1% or less aromatic impurities can be obtained in good yields from alkylbenzene residues contg. less than 10% to 30% I-inconvertible hydrocarbon impurities, even though these impurities be alkylbenzenes separable, if at all, only with great difficulty by superfractionation. The I-inconvertible hydrocarbons are eliminated by over-**oxidation** during partial **oxidation** of the I-convertible alkyl benzenes. The **oxidation** step is carried out by mixing the alkylbenzene vapors with air and passing the gaseous mixt. over a V2O5 **catalyst** maintained at a dark-red heat. Only a relatively short zone of the **catalyst**, 1/3 to 1/6 of the bed, needs to be maintained at this temp. in order to secure the required degree of over-**oxidation**. The molar ratio of air to hydrocarbon is desirably in the range 50:1 to 150:1. The I-inconvertible hydrocarbons are converted mainly to CO2 and water, and the I is easily sepd. from the gases by cooling and condensation. Preferred **catalysts** for aromatizing naphthenic petroleum hydrocarbons are the Mo oxide-Al2O3 and V oxide-Al2O3 **catalysts**, particularly those obtained by copptn. to yield an interlocked oxide of gel structure. For aromatization of paraffinic hydrocarbons by dehydrocyclization, suitable **catalysts** may be prepd. by impregnating granulated, activated Al2O3 with an aq. soln. of Cr2O3 to yield 8% Cr2O3 on the Al2O3. The impregnated particles are dried and preferably reduced in place in a H atm. before use. For the **oxidation** a nonporous **catalyst** in which V2O5 is an active component has been found to give best results. Porous **catalysts**, though not precluded, have been found less effective, and tend to increase over-**oxidation** of the I-convertible alkylbenzenes. A preferred-type **oxidation catalyst** may be prepd. by evapg. an aq. paste of chemically pure NH4 metavanadate on 20-mesh, granular Al, and igniting the coated granules at 649.degree. to liberate NH3 and form V2O5, which fuses the granules into a coherent mass. Cf. C.A. 42, 4610d.

L7 ANSWER 42 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1949:34899 CAPLUS  
 DOCUMENT NUMBER: 43:34899  
 ORIGINAL REFERENCE NO.: 43:6338e-g  
 TITLE: Catalytic partial **oxidation process**  
 INVENTOR(S): Beach, Leland K.; Connolly, Gerald C.  
 PATENT ASSIGNEE(S): Standard Oil Development Co.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2471853		19490531	US	<--

AB A **catalyst**-impregnated silica or alumina hydrous oxide gel, heated above 700.degree. to reduce the sorptive value, can be used as a fluid **catalyst** in partial **oxidation processes**. Purified silica hydrogel, d. 0.691, is ground in a ball mill with NH4VO3 soln., and the mixt. is heated 3 hrs. at 870.degree. to give a **catalyst**, d. 0.81, contg. 30% V2O5. A mixt. of 0.99 vol. % C10H8 and 40 vol. % steam in air is heated to 460.degree. and passed through a

reaction zone of the **catalyst** at 0.1 sec. contact time. The product is sepd. and condensed to give 77% **phthalic anhydride**. Cf. Pirzer, C.A. 41, 7731d.

L7 ANSWER 43 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1948:34407 CAPLUS  
 DOCUMENT NUMBER: 42:34407  
 ORIGINAL REFERENCE NO.: 42:7337e-g  
 TITLE: **Oxidation** of aromatic compounds  
 INVENTOR(S): Morrell, Charles E.; Beach, Leland K.  
 PATENT ASSIGNEE(S): Standard Oil Development Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2443832		19480622	US	<--

AB Partially oxidized alkylated aromatic hydrocarbons are catalytically oxidized in the vapor phase to produce polybasic aromatic acids or anhydrides. Thus, .omicron.-toluic acid, 1 mol., is oxidized with 100 mols. air at 4000 vols./vol./hr. and 450.degree., over V205 **catalyst**, to give 85 mol. % **phthalic anhydride** and only a trace of maleic anhydride. Under similar conditions, but with direct **oxidation** of the aromatic hydrocarbons, .omicron.-xylene gives 67% **phthalic anhydride** and 7% maleic anhydride, while C10H8 gives 76% **phthalic anhydride** and 8% maleic anhydride. The **process** is adaptable to either the fixed-bed or the fluid-**catalyst** technique.

L7 ANSWER 44 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1947:39220 CAPLUS  
 DOCUMENT NUMBER: 41:39220  
 ORIGINAL REFERENCE NO.: 41:7740b-d  
 TITLE: **Phthalic anhydride**  
 INVENTOR(S): Ruthruff, Robert F.  
 PATENT ASSIGNEE(S): Sherwin-Williams Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2425398		19470812	US	<--

AB A **process** is described covering the manuf. of **phthalic anhydride** from a petroleum fraction isolated from a reformed petroleum naphtha and contg. substantial amts. of naphthalene and alkylnaphthalenes. A petroleum naphtha, boiling from about 225.degree. to 440.degree.F., is, after subjection to reforming operations with MoO2 or Cr2O3 **catalyst** at 925.degree. to 1025.degree.F. in the presence of H and 300 lb./sq. in., distilled to yield, besides gas and gasoline, a bottom fraction (I) boiling from 453.degree. to 752.degree.F. A 10 to 60% overhead fraction from I is brought into contact with air at 115.degree.F. and the mixt. is passed over V205 **catalyst** at 400-500.degree.F., 1 to 2 atm., and 0.15 to 0.5 second contact time. The reaction is highly exothermic and Hg under CO2 pressure is used for cooling. A yield of 30.7 parts of **phthalic anhydride** was obtained per 100 parts by wt. of charge.

L7 ANSWER 45 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1947:13436 CAPLUS

DOCUMENT NUMBER: 41:13436  
 ORIGINAL REFERENCE NO.: 41:2747e-f  
 TITLE: Improved **process** for manufacturing dicarboxylic anhydrides  
 INVENTOR(S): Porter, Frank  
 PATENT ASSIGNEE(S): The Solvay Process Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2415531		19470211	US	<--

AB Phthalic and maleic anhydrides are prepd. by an improved **process**, utilizing the effluent reaction vapors as cooling media for the **catalyst** chamber by periodically reversing the flow of the gaseous stream. Increased hydrocarbon to O ratios are made possible by eliminating conventional adiabatic designs necessitating use of excess O or air as heat-dissipating agents.

L7 ANSWER 46 OF 46 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1939:20112 CAPLUS  
 DOCUMENT NUMBER: 33:20112  
 ORIGINAL REFERENCE NO.: 33:2913i,2914a  
 TITLE: **Phthalic anhydride**  
 INVENTOR(S): Porter, Frank  
 PATENT ASSIGNEE(S): Solvay Process Co.  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2142678		19390103	US	<--

AB A **process** such as the catalytic **oxidation** of naphthalene in vapor phase comprises passing a mixt. of the aromatic hydrocarbon and an oxidizing gas into brief contact with an **oxidation catalyst** of high activity to initiate the **oxidation** and then passing the mixt. into contact with a **catalyst** of reduced activity, the **catalysts** being disposed in a bed of uniform cross section subjected to external cooling by a medium having about the same temp. throughout the length of the bed. App. is described.

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